IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Larry C. Frame et al.

Application No.: 10/044,484

Filed: January 11, 2002

For: METHODS AND SYSTEMS FOR EXTRACTING RELATED INFORMATION FROM FLAT FILES

Examiner: Debbie M. Le

Art Unit: 2167

DECLARATION PURSUANT TO 37 C.F.R. §1.131

Commissioner for Patents
P.O. Box 1450
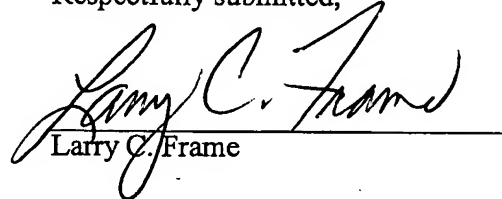Alexandria, VA 22313-1450

Sir:

I, Larry C. Frame, declare as follows:

1.   I am a co-inventor of the subject matter of the referenced patent application.

2.   Prior to November 30, 2001, I participated in reducing to practice the subject matter of the above-described patent application (hereinafter "the invention"), as evidenced by Exhibit A. Exhibit A includes pages 1-3 and the last page of the source code file. The change log on the last page documents that, at least by 6/6/01, the invention had been reduced to practice.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the

Larry C. Frame et al.
Application No.: 10/044,484
Page 2

PATENT

like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of

the United States Code, and that such willful false statements may jeopardize the validity

of the above-referenced application or a patent issued therefrom.

Respectfully submitted,

Larry C. Frame

60607769 v1

```
/* REXX */     /* lcframe - 05/16/01 */
/*### NOTE: this version is the next step after version DVSQL4 that has ###*/
/*### the initial try at AND/OR logic for processing a single SELECT   ###*/
/*### alias output reference.  Also this includes the changes to do all ###*/
/*### the WHERE record selection as a group procedure effort and the   ###*/
/*### associated SELECT options/reformatting will process as a procedure###*/
/*### effort AFTER all WHERE seelction processing has finished.         ###*/
/*------------- DVSQL (DV's version3 of SQL for flat files) --------------*\
|  SQL processor for inquiries involving non-DB2 files.                   |
|------------------------------------------------------------------------|
|  The following are processing verbs currently available for this processor |
|  - - - - - - - - - - - - - - - - - - - - - - - - - - -  |
|   SELECT  - definition of selected data to be used as output for the query |
|       format: SELECT {DISTINCT} {sub-parms,} field1, field2, etc.      |
|       Sub Parameters:                                                    |
|               DISTINCT - per the selected fields, make the list singular |
|               COUNT     - number of records selected                     |
|                   format: COUNT({DISTINCT} field)                        |
|               MAX       - largest value for the specified field          |
|                   format: MAX(field)                                     |
|               MIN       - smallest value for the specified field         |
|                   format: MIN(field)                                     |
|       field format: file-letter.(displacement,length)                   |
|               where file-letter is the alphabetic letter associated with the |
|               input DDname on the FROM statement and "displacement" and  |
|               "length" describe the location of the field in the input record. |
|                           - or -                                         |
|       field format: 'literal-value'                                      |
|               where literal value is any character/s that are to be inserted |
|               into the output record.                                    |
|   FROM     - input DDnames and alias letter (maximum of 2 per SELECT)    |
|       format: FROM DDname1 file-letter1, DDname2 file-letter2           |
|               where "DDname" is a DD/filename defined in the JCL of the JOB and |
|               "file-letter" is an UPPER-CASE alphabet letter to be used as a |
|               short-hand association to the file when describing field name for |
|               use with other verbs.                                      |
|   INTO     - output DDname (default is SYSOUT or work file/table)        |
|       format: INTO DDname                                                |
|   WHERE    - conditions of processing                                    |
|      format 1: WHERE A = B       =,<>,<,<=,>,>=  compare                 |
|      format 2: WHERE A IN C      select A values that are in list B      |
|      format 3: WHERE A NOT IN C  select A values that are not in list B  |
|      format 4: WHERE A NUMERIC   class tests  ALPHA, INTERGER, ALPHANUMERIC |
|      format 5: WHERE cond AND cond    intersection of condition outputs  |
|      format 6: WHERE cond OR cond     union of condition outputs         |
|      format 7: WHERE A BETWEEN value1 AND value2                         |
|         NOTE: in the above formats, A designates an input field,         |
|               B designates an input field or a literal value ( 'xxxxxx' ), |
|               C designates either a user defined table of values         |
|                  "('A','B','C','etc')" or a sub-query "(SELECT etc etc)" |
|   ORDER BY  - sorted order to save output in                             |
|      format: ORDER BY field1, field2, field3, etc.       where...        |
|           fieldx is (displacement,length){ order}                        |
|               displacement - location of field in output record          |
|               length        - length of field at specified location      |
|               order         - ASC (ascending - default) or DESC (descending) |
|------------------------------------------------------------------------|
|  Note: When using the NOT IN option of the WHERE verb, it is assumed that |
|    the user will not be selecting any fields from the control file for use |
|    in the output, as that would be stupid since you are looking for compare |
|    records that don't have their key in the control file.                |
```

```
| ------------------------------------------------------------------------- |
| Note: This processor processes ALL logical file relations and comparisons |
|    (WHERE information) associated with an SQL level first, then does ALL   |
|    SELECT record reformatting on the resulting file of information.        |
|        A WHERE comparison involving more than one file (a compare and control|
|    file) results in a compound record structure consisting of selected    |
|    comparison-file records suffixed with the logically paired control-file |
|    records.  This causes the DVSQL program to use enhanced field referencing|
|    when doing the final SELECT processing for each SQL level since the      |
|    requested field may reside in the suffixed (extended) portion of the    |
|    WHERE output record.                                                     |
|        If complex (multi-file) compare is to be done for any SQL level, it  |
|    must be the first compare in the WHERE verb for that level.  This tells  |
|    the processor that the rest of the comparisons of that level will involve|
|    use of a compound file structure.                                        |
| ------------------------------------------------------------------------- |
|   Control cards are inputted via the SYSIN DD.                              |
\*-----------------------------------------------------------------------*/
/*-----------------------------------------------------------------------*\
|   Passed parm information is as follows:                                   |
|       PNODE  -  The primary node to use in creating sort work data sets and |
|            other needed work files.                                        |
|       WKDISP -  Valid values are KEEP and DELETE (<--default).  This tells  |
|            the processor whether to keep or delete generated work files     |
|       OUTDSN -  data set name of the default output file to be automatically|
|            generated in place of specifying the INTO verb.  If OUTDSN is    |
|            specified, the INTO SQL verb will be ignored.                    |
\*-----------------------------------------------------------------------*/
     parse upper arg PNODE WKDISP OUTDSN JUNK


/*-----------------------------------------------------------------------*\
|*  Make sure a Primary NODE value was specified                             |
\*-----------------------------------------------------------------------*/
     if PNODE = '' | PNODE = 'HELP'    then
          do
              say ' '
              say ' '
              say '  Format of //SYSTSIN DD * control card is as follows:'
              say '     " %DVSQL PNODE WKDISP OUTDSN "'
              say '  where  PNODE is the primary node to catalog all work areas and'
              say '               data sets (mandatory field)'
              say '         WKDISP is the disposition of all work data sets used and'
              say '               created in the DVSQL process.  Valid values are '
              say '               *, KEEP, DELETE.  KEEP causes all work data sets to'
              say '               be kept after processing is complete.  DELETE or *'
              say '               (the defaults) cause all work data sets to be '
              say '               deleted (cleaned up) after processing is complete.'
              say '         OUTDSN is the name of the output data set to be used to'
              say '               store the DVSQL output.  This option overrides any'
              say '               use of the INTO verb in the SQL requests.'
              say ' '
              say ' '
              say '      ++ Options and Format of DVSQL Statements ++'
              say ' '
              call SELECT_FORMAT
              call FROM_FORMAT
              call INTO_FORMAT
              call WHERE_FORMAT
              call ORDER_BY_FORMAT
              exit 8
          end
```

```
/*-----------------------------------------------------------------------*\
|* Verify inputted WKDISK parm                                            |
\*-----------------------------------------------------------------------*/
   select
        when WKDISP = '*'        then WKDISP = 'DELETE'     /* use default */
        when WKDISP = 'DELETE'   then nop
        when WKDISP = 'KEEP'     then nop
        when WKDISP = ''         then WKDISP = 'DELETE'     /* use default */
        otherwise
            do
                say '*************'
                say '**   ERROR  **'
                say '*************'
                say '   The inputted work data set disposition PARM value',
                    '"'WKDISP'" is invalid.'
                say '   Valid values are:'
                say '      "DELETE" - delete all work data sets generated'
                say '      "KEEP"   - keep all generated work data set'
                say '      "*"      - use the DELETE default'
                return 8
            end
   end

   say ' '
   say '---- Specified DVSQL command line PARMs ----'
   say '          PNODE  = 'PNODE
   say '          WKDISP = 'WKDISP
   if OUTDSN = ''      then
        say '          OUTDSN = N/A'
   else
        say '          OUTDSN = 'OUTDSN
   say ' '

/*-----------------------------------------------------------------------*\
|* Put the user inputted SQL control cards onto an internal SYSIN. table  |
\*-----------------------------------------------------------------------*/
   x = outtrap('DUMMY.')
  "alloc f(SYSIN)"
   x = outtrap('OFF')
  "execio * diskr SYSIN (stem SYSIN. finis"
   REXX_RC = RC
  "free f(SYSIN)"
   if REXX_RC > 0      then
        do
           say ' Error reading SYSIN, execio RC = 'REXX_RC
           return 16
        end

/*-----------------------------------------------------------------------*\
|*    do compiler stuff to verify format and content of control cards     |
|*    and generate a stack of processing tokens                           |
\*-----------------------------------------------------------------------*/
   QUOT = "'"
   DDS = 0               /* init general query DD list counter */
   OUT#DD = 'SQLOUT'  /* set output default, in case there is no INTO verb */
   OUT#DSN = ''          /* initialize DSN relative to INTO verb */
   SORT#CARD = ''        /* initialize area to store parsed ORDER BY information */
   I = 1                 /* set current query level */
   IMAX = 1              /* set current highest query level */
   call INIT_NEW_QUERY_LEVEL_FIELDS
```

```
"alloc f(SYSOUT) DUMMY"
        /* "call 'FDR.SYNCR36.LINKLIB(SYNCSORT)'"  */
        address ATTCHMVS "SORT"
        /* use LRECL of first record */
        if RC = 0     then
             do
               x = listdsi("'"LRECLCHK"'")
               LRECL = SYSLRECL
             end
        else
             say '**WARNING** could not obtain LRECL info for ',
                  'the data set 'LRECL_DSN
        "free f(SORTIN SORTOUT SYSIN SYSOUT)"
     end
  else
      do
      say '**ERROR** Problem obtaining LRECL info for 'LRECL_DSN
      say '    Cannot process without it.  Processing terminated.'
      exit
      end
  return
```

```
/********************** C H A N G E   L O G ******************************/
/** DATE       PGMR            DESCRIPTION                              */
/*----------------------------------------------------------------------*/
/*          lcframe   NOT IN added to WHERE verb options.               */
/*          lcframe   Cleanup of code, use full DD alias'.' in WHERE_TYPE. */
/*          lcframe   Addition of WHERE IN (table list, etc.) option.   */
/*          lcframe   Upgrade product to handle VSAM and TAPE inputs and be */
/*      generally more generic in processing.                           */
/*          lcframe   Genericise generation of INREC and OUTREC ctlcards. */
/*          lcframe   Add option to specify by final output data set by */
/*      input parm (using internal processing defaults) or specific INTO DD. */
/*          lcframe   Fix a problem with the unit specification associated */
/*      with the compare file parameters.                               */
/*          lcframe  Complete adding the work data set DELETE/KEEP option */
/*          lcframe   Invoke SYNCSORT via ATTCHMVS to be able to more    */
/*      generally locate it on other JES complexes.                     */
/*          lcframe   Make sure the output file is at least empty.  No null */
/*      outputs allowed.                                                */
/* 06/06/01  lcframe  Upgrade changes to allow for use of MIN, MAX, and  */
/*      COUNT functions as well as AND/OR logic in the WHERE verb.      */
/* 2004/01/15  lcframe   SORTWKxx files are no longer needed. SYNCSORT now */
/*      dynamically monitors and allocates SORTWKxxs as needed.          */
/************************************************************************/
```

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

 Larry C. Frame et al.

Application No.: 10/044,484

Filed: January 11, 2002

For: METHODS AND SYSTEMS FOR
EXTRACTING RELATED
INFORMATION FROM FLAT FILES

Examiner: Debbie M. Le

Art Unit: 2167

DECLARATION PURSUANT TO
37 C.F.R. §1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

 I, Mark Rowe, declare as follows:

 1. I am a co-inventor of the subject matter of the referenced patent
application.

 2. Prior to November 30, 2001, I participated in reducing to practice the
subject matter of the above-described patent application (hereinafter "the invention"), as
evidenced by Exhibit A. Exhibit A includes pages 1-3 and the last page of the source
code file. The change log on the last page documents that, at least by 6/6/01, the
invention had been reduced to practice.

 I hereby declare that all statements made herein of my own knowledge are true
and that all statements made on information and belief are believed to be true; and further
that these statements were made with the knowledge that willful false statements and the

Larry C. Frame et al.
Application No.: 10/044,484
Page 2

PATENT

like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or a patent issued therefrom.

Respectfully submitted,

Mark Rowe

60608073 v1

```
/* REXX */      /* lcframe - 05/16/01 */
/*### NOTE: this version is the next step after version DVSQL4 that has ###*/
/*### the initial try at AND/OR logic for processing a single SELECT   ###*/
/*### alias output reference.  Also this includes the changes to do all ###*/
/*### the WHERE record selection as a group procedure effort and the    ###*/
/*### associated SELECT options/reformatting will process as a procedure###*/
/*### effort AFTER all WHERE seelction processing has finished.          ###*/
/*------------ DVSQL (DV's version3 of SQL for flat files) ----------------*\
|  SQL processor for inquiries involving non-DB2 files.                     |
|--------------------------------------------------------------------------|
|  The following are processing verbs currently available for this processor|
|  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -             |
|  SELECT  - definition of selected data to be used as output for the query |
|      format: SELECT {DISTINCT} {sub-parms,} field1, field2, etc.          |
|      Sub Parameters:                                                      |
|             DISTINCT - per the selected fields, make the list singular     |
|             COUNT    - number of records selected                         |
|                format: COUNT({DISTINCT} field)                            |
|             MAX      - largest value for the specified field              |
|                format: MAX(field)                                         |
|             MIN      - smallest value for the specified field             |
|                format: MIN(field)                                         |
|      field format: file-letter.(displacement,length)                      |
|             where file-letter is the alphabetic letter associated with the |
|             input DDname on the FROM statement and "displacement" and      |
|             "length" describe the location of the field in the input record.|
|                          - or -                                           |
|      field format: 'literal-value'                                        |
|             where literal value is any character/s that are to be inserted |
|             into the output record.                                       |
|  FROM     - input DDnames and alias letter (maximum of 2 per SELECT)       |
|      format: FROM DDname1 file-letter1, DDname2 file-letter2              |
|             where "DDname" is a DD/filename defined in the JCL of the JOB and|
|             "file-letter" is an UPPER-CASE alphabet letter to be used as a |
|             short-hand association to the file when describing field name for|
|             use with other verbs.                                         |
|  INTO     - output DDname (default is SYSOUT or work file/table)           |
|        format: INTO DDname                                                |
|  WHERE    - conditions of processing                                      |
|     format 1: WHERE A = B       =,<>,<,<=,>,>=  compare                   |
|     format 2: WHERE A IN C      select A values that are in list B        |
|     format 3: WHERE A NOT IN C  select A values that are not in list B    |
|     format 4: WHERE A NUMERIC   class tests  ALPHA, INTERGER, ALPHANUMERIC |
|     format 5: WHERE cond AND cond     intersection of condition outputs   |
|     format 6: WHERE cond OR cond      union of condition outputs          |
|     format 7: WHERE A BETWEEN value1 AND value2                           |
|         NOTE: in the above formats, A designates an input field,          |
|             B designates an input field or a literal value ( 'xxxxxx' ),  |
|             C designates either a user defined table of values            |
|             "('A','B','C','etc')" or a sub-query "(SELECT etc etc)"       |
|  ORDER BY  - sorted order to save output in                               |
|        format: ORDER BY field1, field2, field3, etc.      where...        |
|            fieldx is  (displacement,length){ order}                       |
|             displacement - location of field in output record            |
|             length        - length of field at specified location         |
|             order         - ASC (ascending - default) or DESC (descending)|
|--------------------------------------------------------------------------|
| Note: When using the NOT IN option of the WHERE verb, it is assumed that  |
|    the user will not be selecting any fields from the control file for use |
|    in the output, as that would be stupid since you are looking for compare|
|    records that don't have their key in the control file.                 |
```

```
|--------------------------------------------------------------------------|
| Note: This processor processes ALL logical file relations and comparisons |
|    (WHERE information) associated with an SQL level first, then does ALL  |
|    SELECT record reformatting on the resulting file of information.       |
|        A WHERE comparison involving more than one file (a compare and control|
|    file) results in a compound record structure consisting of selected    |
|    comparison-file records suffixed with the logically paired control-file|
|    records.  This causes the DVSQL program to use enhanced field referencing|
|    when doing the final SELECT processing for each SQL level since the     |
|    requested field may reside in the suffixed (extended) portion of the   |
|    WHERE output record.                                                    |
|        If complex (multi-file) compare is to be done for any SQL level, it |
|    must be the first compare in the WHERE verb for that level.  This tells |
|    the processor that the rest of the comparisons of that level will involve|
|    use of a compound file structure.                                      |
|--------------------------------------------------------------------------|
|   Control cards are inputted via the SYSIN DD.                            |
\*------------------------------------------------------------------------*/
/*------------------------------------------------------------------------*\
|   Passed parm information is as follows:                                  |
|     PNODE   -   The primary node to use in creating sort work data sets and|
|          other needed work files.                                        |
|     WKDISP -  Valid values are KEEP and DELETE (<--default).  This tells  |
|          the processor whether to keep or delete generated work files     |
|     OUTDSN -  data set name of the default output file to be automatically|
|          generated in place of specifying the INTO verb.  If OUTDSN is    |
|          specified, the INTO SQL verb will be ignored.                    |
\*------------------------------------------------------------------------*/
   parse upper arg PNODE WKDISP OUTDSN JUNK


/*------------------------------------------------------------------------*\
|*  Make sure a Primary NODE value was specified                           |
\*------------------------------------------------------------------------*/
   if PNODE = '' | PNODE = 'HELP'     then
      do
         say ' '
         say ' '
         say '   Format of //SYSTSIN DD * control card is as follows:'
         say '        " %DVSQL PNODE WKDISP OUTDSN "'
         say '   where  PNODE is the primary node to catalog all work areas and'
         say '                 data sets (mandatory field)'
         say '          WKDISP is the disposition of all work data sets used and'
         say '                 created in the DVSQL process.  Valid values are '
         say '                 *, KEEP, DELETE.  KEEP causes all work data sets to'
         say '                 be kept after processing is complete.  DELETE or *'
         say '                 (the defaults) cause all work data sets to be '
         say '                 deleted (cleaned up) after processing is complete.'
         say '          OUTDSN is the name of the output data set to be used to'
         say '                 store the DVSQL output.  This option overrides any'
         say '                 use of the INTO verb in the SQL requests.'
         say ' '
         say ' '
         say '        ++ Options and Format of DVSQL Statements ++'
         say ' '
         call SELECT_FORMAT
         call FROM_FORMAT
         call INTO_FORMAT
         call WHERE_FORMAT
         call ORDER_BY_FORMAT
         exit 8
      end
```

```
/*-------------------------------------------------------------------------*\
|* Verify inputted WKDISK parm                                             |
\*-------------------------------------------------------------------------*/
  select
      when WKDISP = '*'        then WKDISP = 'DELETE'     /* use default */
      when WKDISP = 'DELETE'   then nop
      when WKDISP = 'KEEP'     then nop
      when WKDISP = ''         then WKDISP = 'DELETE'     /* use default */
      otherwise
         do
            say '*************'
            say '** ERROR **'
            say '*************'
            say '   The inputted work data set disposition PARM value',
               '"'WKDISP'" is invalid.'
            say '   Valid values are:'
            say '        "DELETE" - delete all work data sets generated'
            say '        "KEEP"   - keep all generated work data set'
            say '        "*"      - use the DELETE default'
            return 8
         end
   end

   say ' '
   say '---- Specified DVSQL command line PARMs ----'
   say '          PNODE  = 'PNODE
   say '          WKDISP = 'WKDISP
   if OUTDSN = ''     then
       say '          OUTDSN = N/A'
   else
       say '          OUTDSN = 'OUTDSN
   say ' '

/*-------------------------------------------------------------------------*\
|* Put the user inputted SQL control cards onto an internal SYSIN. table    |
\*-------------------------------------------------------------------------*/
 x = outtrap('DUMMY.')
 "alloc f(SYSIN)"
 x = outtrap('OFF')
 "execio * diskr SYSIN (stem SYSIN. finis"
 REXX_RC = RC
 "free f(SYSIN)"
 if REXX_RC > 0     then
      do
        say ' Error reading SYSIN, execio RC = 'REXX_RC
        return 16
      end

/*-------------------------------------------------------------------------*\
|*    do compiler stuff to verify format and content of control cards      |
|*    and generate a stack of processing tokens                            |
\*-------------------------------------------------------------------------*/
 QUOT = "'"
 DDS = 0             /* init general query DD list counter */
 OUT#DD = 'SQLOUT'  /* set output default, in case there is no INTO verb */
 OUT#DSN = ''       /* initialize DSN relative to INTO verb */
 SORT#CARD = ''     /* initialize area to store parsed ORDER BY information */
 I = 1              /* set current query level */
 IMAX = 1           /* set current highest query level */
 call INIT_NEW_QUERY_LEVEL_FIELDS
```

```
"alloc f(SYSOUT) DUMMY"
       /* "call 'FDR.SYNCR36.LINKLIB(SYNCSORT)'" */
       address ATTCHMVS "SORT"
       /* use LRECL of first record */
       if RC = 0      then
            do
               x = listdsi("'"LRECLCHK"'")
               LRECL = SYSLRECL
            end
       else
            say '**WARNING** could not obtain LRECL info for ',
                'the data set 'LRECL_DSN
      "free f(SORTIN SORTOUT SYSIN SYSOUT)"
    end
  else
      do
         say '**ERROR** Problem obtaining LRECL info for 'LRECL_DSN
         say '    Cannot process without it.   Processing terminated.'
         exit
      end
  return
```

```
/********************* C H A N G E   L O G *******************************/
/** DATE        PGMR                DESCRIPTION                          */
/*---------------------------------------------------------------------*/
/*           lcframe  NOT IN added to WHERE verb options.               */
/*           lcframe  Cleanup of code, use full DD alias'..' in WHERE_TYPE.   */
/*           lcframe  Addition of WHERE IN (table list, etc.) option.   */
/*           lcframe  Upgrade product to handle VSAM and TAPE inputs and be */
/*       generally more generic in processing.                         */
/*           lcframe  Genericise generation of INREC and OUTREC ctlcards.  */
/*           lcframe  Add option to specify by final output data set by */
/*       input parm (using internal processing defaults) or specific INTO DD. */
/*           lcframe  Fix a problem with the unit specification associated */
/*       with the compare file parameters.                             */
/*           lcframe  Complete adding the work data set DELETE/KEEP option */
/*           lcframe  Invoke SYNCSORT via ATTCHMVS to be able to more   */
/*       generally locate it on other JES complexes.                   */
/*           lcframe  Make sure the output file is at least empty.  No null */
/*       outputs allowed.                                              */
/* 06/06/01  lcframe  Upgrade changes to allow for use of MIN, MAX, and */
/*       COUNT functions as well as AND/OR logic in the WHERE verb.    */
/* 2004/01/15  lcframe  SORTWKxx files are no longer needed. SYNCSORT now */
/*       dynamically monitors and allocates SORTWKxxs as needed.       */
/***********************************************************************/
```